

UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-CAMERA SHUTTER.

SPECIFICATION forming part of Letters Patent No. 520,972, dated June 5, 1894.

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To all whom it may concern:

Be it known that I, ABNER G. TISDELL, a citizen of the United States of America, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Photographic-Camera Shutters, of which the following is a specification.

My invention relates to shutters for photographic cameras and to that class used for instantaneous or very brief exposures, although it could be adapted for use in time exposures. Such shutters have been formed and constructed in various ways; but they may, generally speaking, be roughly classed as follows: Those in which the shutter moves across the front of the lens, exposing the plate by its movement always in one direction for the exposure, having to be set by the operator in the reverse direction when preparing to take a picture. Such shutters are driven by springs in the direction of the movement necessary for the exposure, and the operator compresses the spring when he sets the shutter before exposure. Of course, in this class of shutter, the setting of the shutter and the freeing thereof are two separate and distinct operations. Another class of shutter consists of a rotating device driven by a suitable coil spring, which always moves for exposure in the same direction, the operator winding the spring from time to time and freeing the shutter with a button or like device when the exposure is to be made. In this class of shutter, as in the previous one, placing the spring under tension to drive the shutter requires one operation, while the freeing of the shutter to make an exposure is a separate and distinct operation. Another class of shutter exists, invented by myself, wherein the motion to free the shutter first compresses a spring, and then when the proper compression is obtained the shutter passes across the lens, exposing the picture. In other words the act of compressing the spring and freeing the shutter is a single and continuous operation. To make another exposure, the button or operating lever is pushed in the opposite direction, and the shutter passes in the reverse direction across the lens; and the second exposure is thus made. In this case the

shutter is driven by the compressed spring, and the button has to be moved in opposite directions at each exposure. This is disadvantageous, as the operator never knows in which direction to press the button, unless he remembers how he pressed it at the last exposure.

My present invention is clearly distinguishable from any of these previous devices; and it is distinguishable, first, from the fact that the shutter is not driven by spring action; second, from the fact that the shutter is adapted to make an exposure of the proper time at each vibration thereof across the face of the lens, while at the same time the button which is pressed by the operator's fingers is moved in the same direction always, regardless of which direction the shutter may be required to move for the purpose of exposure. Thus, all the operator has to do is to pull upon the button, and when he hears the shutter move remove his finger, the button assuming its primary position; and for the next exposure the operator repeats the previously described operation, always giving the button or lever the same direction of motion. Thus, in my present invention I have a shutter adapted for exposing the plate for a proper length of time despite the direction of movement of the shutter; and I have an operating button or lever which with every exposure is pressed in the same direction; and my shutter is not driven by any compressed spring, or the like, but by the action of the mechanism now being described.

I may here state, before describing the drawings, that the speed of operation of my shutter is variable, and may be adjusted by regulating the pressure upon the shutter of two springs, which also act to take up the momentum of the shutter after it passes the lens opening and which bring it to a state of rest.

In the drawings Figure 1 shows my shutter in one of its two normal positions. Fig. 2 shows the shutter after it has been moved from the position shown in Fig. 1 to the position shown in Fig. 3, and before the operator has removed his finger from the operating button or lever. Fig. 3 shows the shutter in its second normal position. Fig. 4 shows the shutter returned to the original position